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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,375	09/16/2003	Murali Sethumadhavan	RGP-0122	1622
23413	7590	09/20/2004	EXAMINER	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			LAM, CATHY FONG FONG	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 09/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/663,375	Applicant(s) SETHUMADHAVAN ET AL.	
	Examiner Cathy Lam	Art Unit 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 17-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 22-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/1, 2/2&1/5/04</u> . | 6) <input checked="" type="checkbox"/> Other: <u>IDS 11/3/03</u> . |

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-16 & 22-24, drawn to a circuit material, classified in class 428, subclass 209.
 - II. Claims 17-21, drawn to a process of forming a dielectric LCP composite, classified in class 156, subclass 224+.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by a different process such as by dipping a fibrous web into an uncured resin, wherein inorganic or organic fillers were dispersed in the uncured resin. Then pressing and heating the resin coated fibrous web. The process as claimed can be used to make a different product such as a transfer.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Atty: Leah Reimer on September 13, 2004 a provisional election was made without traverse to prosecute the invention of group I, claims 1-16 and 22-24. Affirmation of this election must be made by applicant in

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replying to this Office action. Claims 17-21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

5. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 22 (appeared 2 times) need to be corrected in the amendment. ***Claim Rejections - 35 USC § 112***

6. Claims 14 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 14, it is unclear whether or not "the first dielectric layer" and "the second dielectric layer" are referring to "a first dielectric substrate layer" and "a second dielectric substrate layer", respectively. Applicant is required to be consistently throughout.

Claim 16 is structurally indefinite.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 1-2, 5-6, 9-10 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Furuta et al (US 6124004).

Furuta discloses a laminate comprised of a layer of liquid crystalline polymer and a metallic foil. The laminate is particularly useful for circuit boards or a multilayer circuit board (col 1 L 15-21).

The metallic foil is preferably copper foil on which a b-stage or a molten liquid crystalline polymer is coated (col 12 L 18-21, L 34-37).

The liquid crystalline polymer may be impregnated with fibrous material such as glass fiber and inorganic filler such as silica (col 12 L 56-57, col 13 L 4-6, col 10 L 23-26). Additives such as flame retardant can be added to the LCP (col 10 L 33-39).

Furuta discloses several working examples, all of them has a dielectric constant below 2.5 (col 18 Table 3 & col 19 Table 4).

Furuta's laminate has an excellent heat resistance, low dielectric constant, low dielectric loss constant and low water absorption (col 2 L 38-40).

Furuta although is silent about a dissipation factor and its flame resistance rating. Since Furuta's laminate includes all the necessary ingredients, it would be inherent that Furuta's laminate possesses the same properties.

9. Claims 1-3 and 5-15 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Berger et al (US 6528445).

Berger discloses a composite for used in electronic substrates. The composite is comprised of a polymeric material, a filler material and a metal conductor.

The polymeric material can be a liquid crystalline polymer (col 5 L 45-46). A glass ceramic material is used as a filler impregnated into the polymer resin, the glass ceramic material can be SiO₂, silica, and quartz, etc. and the glass ceramic material can be in the form of powder or fibers, etc. (col 6 L 48-54). The glass ceramic filler is first treated with coupling agents (col 8 L 1-3).

A metal conductor such as copper is plated onto the surface of the filled polymer material (col 7 L 54-55). The metal conductor can be formed onto one or both surface of the polymer material (col 7 L 36-45).

Berger's composite has a low dielectric constant of 3.5 or less and a low moisture absorption (< 1 %) (col 5 L 31-32 & col 6 L 40-43).

Berger is silent about the dissipation factor and the flame resistance rating, but the examiner takes the position that it would be inherent since the ingredients disclosed by Berger meet the present invention.

10. Claims 22-24 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Berger et al (US 6528145).

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Berger discloses a ceramic filled polymer substrate comprised of a liquid crystalline polymer and a particulate filler (col 5 L 45-46).

The particulate filler can be SiO₂ or silica powders (col 6 L 48-50). The fillers are surface treated with coupling agents (col 8 L 2-5).

The particulate filler in the form of particles could improve the CTE in x, y, and z directions in the ceramic filled polymer (col 6 L 52-57).

Claim Rejections - 35 USC § 102/103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-16 are rejected under 35 U.S.C. 102(b) & 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Berger et al (US 6528445) or Furuta et al (US 6124004).

Both Berger and Furuta teach the present invention but are silent about some properties claimed by the applicant.

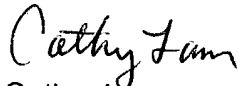
In view of the two prior art teachings, it would have been obvious that the prior art inventions possess the same properties because the materials as claimed are met by the references and that properties are materially dependent.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Cathy Lam
Primary Examiner
Art Unit 1775

cfl
September 14, 2004